247348

USCG-2003-14749-3

Cost Assessment
and
Initial Regulatory Flexibility Analysis

Vessel Security Plans

Temporary Interim Rule

USCG-2003-14749

June 30, 2003

Standards Evaluation and Analysis Division (G-MSR-1)
U.S. Coast Guard Headquarters

Acronyms

APA	Administrative Procedures Act
BLS	U.S. Department of Labor Bureau of Labor Statistics
CFR	Code of Federal Regulations
COTP	Captain of the Port
CSO	Company Security Officer
DHS	U.S. Department of Homeland Security
DOT	U.S. Department of Transportation
DoS	Declaration of Security
FR	Federal Register
GT	Gross Tons
IMO	International Maritime Organization
IRFA	Initial Regulatory Flexibility Analysis
ISPS Code	International Ship and Port Facility Security Code
MARAD	U.S. Maritime Administration
MARSEC	Maritime Security Level
MODU	Mobile Offshore Drilling Unit
MSMS	Marine Safety Management System
MTSA	Marine Transportation Security Act of 2002
NAICS	North American Industry Classification System
N-RAT	National Risk Assessment Tool
NVIC	Navigation and Vessel Inspection Circular
O&M	Operation and Maintenance
OCS	Outer Continental Shelf
OSV	Offshore Supply Vessel
PV	Present Value
RFA	Regulatory Flexibility Act
SBA	Small Business Administration
SOLAS	Convention for the Safety of Life at Sea
TIR	Temporary Interim Rule
USC	United States Code
VSA	Vessel Security Assessment
VSP	Vessel Security Plan
VSO	Vessel Security Officer

Contents

Tables

Executive summary

Note: for definition of acronyms, refer to the list at the beginning of the report.

Although the Coast Guard is exempt from the APA for the MTSA rulemakings, we have prepared this analysis presenting the cost and magnitude of costs that the maritime transportation industry could incur for implementing and complying with the TIR as authorized by the MTSA of 2002. The TIR implements the ISPS Code developed by IMO and adopted on December 12, 2002.

This rule provides security measures for certain vessels calling on U.S. ports. It requires the owner or operator of a vessel to designate security officers for the vessel, develop security plans based on security assessments and surveys, implement security measures specific to the vessel's operation, and indicate MARSEC Levels. This rule is one of six TIRs that implements national maritime security initiatives concerning area maritime transportation, vessels, facilities, offshore facilities, and the Automatic Identification System.

For the purposes of good business practice or regulations promulgated by other federal and state agencies, many companies have spent, to date, a substantial amount of money and resources to upgrade and improve security. The costs shown in this analysis do not include resources these companies have already spent to enhance security.

We realize that every company engaged in maritime commerce will not implement the TIR exactly as presented in this analysis. Depending on each company's choices, some companies could spend much less than what is estimated herein, while others could spend significantly more. In general, we assume that each company will implement the TIR based on the type of vessels or facilities it owns or operates and whether it engages in international or domestic trade.

This analysis presents the estimated cost if vessels are operating at MARSEC Level 1 (the current level of operations since the events of September 11, 2001). We also estimate the costs for operating for a brief period at MARSEC Level 2, an elevated level of security. We do not estimate the costs for operating at MARSEC Level 3, the highest level of security because the costs associated with MARSEC Level 3 would be very specific to the incident that were about to occur or would have occurred, and we do not have a good basis for estimating these costs.

We do not anticipate that implementing the TIR will require additional manning aboard vessels; the duties envisioned can be assumed by existing personnel.

Implementing the TIR will affect about 10,250 U.S.-flagged SOLAS, domestic (non-SOLAS), and foreign-flagged non-SOLAS vessels.

The estimated cost of complying with the TIR is PV $1.368 billion (2003–2012, 7 percent discount rate). Approximately PV $248 million of this total is attributable to U.S.-flagged SOLAS vessels, PV $1.110 billion is attributable to domestic vessels (non-SOLAS), and approximately PV $9 millions is attributable to foreign-flagged non-SOLAS vessels. In the first year of compliance, the cost of purchasing equipment, hiring security officers, and preparing paperwork is an estimated $218 million (non-discounted, $42 million for the U.S.-flagged SOLAS fleet, $175 million for the domestic fleet, $1 million for the foreign-flagged non-SOLAS fleet). Following initial implementation, the annual cost of compliance is an estimated $176 million (non-discounted, $32 million for the U.S.-flagged SOLAS fleet, $143 million for the domestic fleet, $1 million for the foreign-flagged non-SOLAS fleet). CSOs and training are the primary cost drivers of the TIR.

We estimate approximately 135,000 burden hours for paperwork during the first year of compliance (33,000 hours for the U.S.-flagged SOLAS fleet, 101,000 hours for the domestic fleet, 1,000 hours for the

foreign-flagged non-SOLAS fleet). We estimate approximately 12,000 annual burden hours following full implementation of the TIR (2,000 hours for the U.S.-flagged SOLAS fleet, 10,000 hours for the domestic fleet, less than 1,000 hours for the foreign-flagged non-SOLAS fleet).

We also estimate the annual cost for going to an elevated security level, MARSEC Level 2, in response to increased threats. The duration of the increased security level will be entirely dependent on intelligence received. For this analysis, we estimate costs for MARSEC Level 2 using the following assumptions: all ports will go to MARSEC Level 2 at once, each elevation will last 21 days, and the elevation will occur twice a year. The estimated cost associated with these conditions is $235 million annually.

Analysis

Period of analysis

The period of analysis is 2003–2012 (10 years). Companies must come into compliance with the TIR in 2004, but we assume that companies will purchase equipment and develop security plans prior to the effective date. We assume, therefore, that initial costs will be incurred in 2003, and annual costs will be incurred each year 2004–2012.

Population affected

The population of affected vessels is derived from the Coast Guard's MSMS database, DOT's National Ferry Database, and Coast Guard COTPs. The U.S.-flagged SOLAS population affected is presented in Table 1. As shown, most of the U.S.-flagged SOLAS fleet are freight ships, tank ships, small passenger vessels, or OSVs. We estimate that 143 companies own/operate these vessels.

Table 1. Estimated U.S.-flagged SOLAS population[1]

Vessel	Count	Percent[2]
Freight ship	241	40.0%
Freight barge	2	0.3%
Tank ship	114	18.9%
Tank barge	14	2.3%
Towboat	14	2.3%
Fishing	1	0.1%
Cruise vessel	2	0.3%
Other passenger vessel	109	18.1%
MODU	2	0.3%
OSV	75	12.4%
Oil recovery	1	0.1%
Research vessel	8	1.3%
Industrial vessel	20	3.3%
Total	**603**	**100%**

[1] There are 89 freight ships, 19 tanks ships, 1 MODU, and 1 research vessel owned by MARAD.

[2] Sum may not add to total due to independent rounding.

The domestic population (non-SOLAS) affected is presented in Table 2. As shown, most of the domestic fleet are tank barges, towboats, or OSVs. We estimate 1,989 companies own/operate these vessels.

Table 2. Estimated domestic population

Vessel	Count	Percent[1]
Freight ship	99	1.0%
Tank ship	34	0.4%
Tank barge	2,891	30.2%
Towboat > 6 meters	4,645	48.6%
Passenger, ≤ 100 GT, not ferry	223	2.3%
Passenger, ≤ 100 GT, ferry, > 500 passengers	43	0.4%
Passenger, ≤ 100 GT, ferry, ≤ 500 passengers	435	4.5%
Passenger, > 100 GT, cruise	2	0.0%
Passenger, > 100 GT, not ferry	67	0.7%
Passenger, > 100 GT, ferry, > 500 passengers	49	0.5%
Passenger, > 100 GT, ferry, ≤ 500 passengers	92	1.0%
OSV	981	10.3%
Total	**9,561**	**100%**

[1] Sum may not add to total due to independent rounding.

This TIR will also affect 70 freight vessels that are foreign-flagged but not subject to the requirements of SOLAS. We include these vessels because they are not affected by SOLAS requirements but must meet the requirements of the TIR if they wish to make port calls in the United States.

Unit cost assumptions

Equipment

Costs of equipment reflect our estimate of market prices as well as comments provided in response to a December 2002 meeting notice.[1] We estimate annual O&M cost for equipment is 10 percent of the purchase price. This estimate accounts for normal wear and tear, breakage, and theft to the equipment. Not all vessels will install each piece of equipment. Unit costs of equipment are presented in Table 3.

Table 3. Unit cost of equipment

Equipment	Initial	Annual
Hand-held metal detector	$200	$20
Lock	300	30
Light	400	40
Camera	475	48
Auto-intrusion alarm	500	50
Hand-held radio	500	50
Ship alert system (SOLAS only)	2,000	200
Archway metal detector	5,500	550
Portable vapor detector	15,000	1,500
X-ray baggage machine	39,000	3,900

Personnel, training, drilling, and planning

Costs of personnel and training are based on previous Coast Guard analyses that estimated training and planning costs. Personnel and training costs will be incurred each year of the analysis. Drilling costs will be incurred annually, but not initially. Planning costs will be incurred initially and annually, with more costs incurred initially as companies develop their security plans.

We assume costs will vary based on the types of vessels companies own. Companies are classified into four categories based on size and whether or not they are "towing" companies. For the purpose of this analysis, we assume that a large company owns more than 10 vessels (excluding towboats and barges). A small company owns 10 or fewer vessels (excluding towboats and barges).[2] A "towing" company owns only towboats and barges. A "non-towing" company is any other company. Thus, we estimate costs for large non-towing, small non-towing, large towing, and small towing companies.

We assume that large companies will have a dedicated CSO at a cost of $150,000. This annual cost is a "loaded" labor rate, which means it includes the costs of employee benefits (vacation, health insurance, other overhead costs). Small companies will have a part-time CSO (we estimate 0.25 of a dedicated person, $150,000 × 0.25 = $37,500). CSOs and key crew will have some form of training annually as refresher courses and to address potential employee turnover within a company. Large companies will train more personnel than small companies. The TIR also requires all CSOs to participate in an annual security exercise; these costs have been accounted for in the analysis for the TIR addressing Port Area

[1] FR 79742, Vol. 67, No. 250. December 30, 2002.

[2] Our use of "large" or "small" to characterize a vessel company does not have the same meaning as the SBA's definition. SBA uses NAICS, revenues, and number of employees to determine company size.

Maritime Security (USCG-2003-14733). Additionally, the TIR also requires DoS for certain vessels and the facilities with which they interface; these costs have been accounted for in the analysis for the TIR addressing Facility Security (USCG-2003-14732).

VSOs will be existing personnel on board vessels that will allocate part of their time toward security activities. For non-towing vessels at MARSEC Level 1 (normal threat conditions), we estimate 0.10 of a dedicated person that costs $85,000 annually (again, a loaded labor rate that represents an average cost of the labor performing these duties). We estimate that the person conducting these activities is a relatively high-level mariner aboard his vessel. Based on published wage rates for mariners, we estimate a monthly salary of $5,000. This is "loaded" by a factor of 1.4 to calculate the overhead expense to the company, for a total monthly cost of $7,000. This is multiplied by 12 months for a total annual cost of approximately $85,000. For towing vessels at MARSEC Level 1, we estimate 0.05 of the master's time at a cost of $85,000 annually. Barges will not have VSOs. At MARSEC Level 2 and 3 there would be additional time required by these personnel. These costs are discussed in a later section.

For VSAs and VSPs, we assume the company will prepare the core documents, and there will be an incremental cost for each vessel included in the assessment or plan. The incremental cost added to each plan will be a function of the number and type of vessels, with the number of additional hours by vessel type. We assume each hour of planning costs an average of $100/hour (again, a loaded labor rate that represents an average cost of the labor performing these duties). While some employees cost more than this and some cost less, we believe $100/hour is a reasonable average cost of the employees who would conduct this work. To calculate costs for VSAs and VSPs, we estimated the number of hours that would be required initially (document development and submission) and annually (document updates), then multiplied by the hourly cost.

For drilling, the time required will depend on the number of crewmembers aboard the vessel. We assume each hour of drilling also costs an average of $100/hour per crewmember (again, a loaded labor rate that represents an average cost of the labor performing these duties). The number of crewmembers drilling will vary by vessel type. Table 4 summarizes personnel costs.

Table 4. Unit cost of personnel (loaded labor costs)

	Large company		Small company	
Personnel	Initial	Annual	Initial	Annual
CSO	$150,000	$150,000	$37,500	$37,500
CSO training	3,500	3,500	2,000	2,000
Training of key crew	5,000	5,000	3,500	3,500
VSO, non-towing	8,500	8,500	8,500	8,500
VSO, towing	4,250	4,250	4,250	4,250
VSA, non-towing	8,000	400	4,000	200
VSA, towing	1,600	100	800	100
VSP, non-towing	8,000	400	4,000	200
VSP, towing	1,600	100	800	100

This TIR will also affect companies that own foreign-flagged vessels that are not subject to SOLAS. We estimate that these companies will have substantially lower costs for personnel than companies that own U.S.-flagged SOLAS or domestic vessels. For the foreign vessels, we have estimated that the cost per hour for personnel at these companies will be $33, approximately one third the cost for U.S. vessels.

Company costs

The cost per company depends on the number and type of vessels a company owns. For this analysis, companies are defined as follows.

- Large non-towing company—company owns more than 10 vessels, none is a towboat or barge; there are 16 companies in our population according to MSMS data
- Large towing company—company owns more than 10 vessels, at least one is a towboat or barge; there are 10 companies in our population according to MSMS data
- Small non-towing company—company owns 10 or fewer vessels, none is a towboat or barge; there are 612 companies in our population according to MSMS data
- Small towing company—company owns only towboats or barges, regardless of the number; there are 1,351 companies in our population according to MSMS data
- U.S.-flagged SOLAS company—treated as a large non-towing company; there are 143 companies in our population according to MSMS data
- Foreign-flagged non-SOLAS company—treated as a small towing company but with a third of the cost due to substantially lower operating costs; there are 70 companies in our population according to Coast Guard COTP representatives

The cost per company by type is presented in Table 5.

Table 5. Cost per company by type

Company type	Initial	Annual
Large non-towing and U.S.-flagged SOLAS company		
CSO	$150,000	$150,000
CSO training	3,500	3,500
Training of key crew	5,000	5,000
VSA	8,000	400
VSP	8,000	400
Total cost	**$174,500**	**$159,300**
Large towing company		
CSO	$150,000	$150,000
CSO training	3,500	3,500
Training of key crew	5,000	5,000
VSA	1,600	100
VSP	1,600	100
Total cost	**$161,700**	**$158,700**
Small non-towing company		
CSO	$37,500	$37,500
CSO training	2,000	2,000
Training of key crew	3,500	3,500
VSA	4,000	200
VSP	4,000	200
Total cost	**$51,000**	**$43,400**
Small towing company		
CSO	$37,500	$37,500
CSO training	2,000	2,000
Training of key crew	3,500	3,500
VSA	800	100
VSP	800	100
Total cost	**$44,600**	**$43,200**
Foreign-flagged non-SOLAS company		
CSO	$12,500	$12,500
CSO training	667	667
Training of key crew	1,167	1,167
VSA	267	33
VSP	267	33
Total cost	**$14,868**	**$14,400**

To calculate total costs per company, we added the company-level costs (above) and the vessel-level costs (equipment, VSO, incremental VSA and VSP costs, drilling), which are described in the next section.

Vessel costs

The following is a summary of the costs for each type of vessel. Company costs are estimated separately (see previous section). These costs reflect the current state of the industry and the current level of compliance with security rulemakings already in effect, but not cost incurred in response to the events of September 11, 2001. Since the TIR does not require specific equipment, we calculated costs based on what we believe an "average" vessel within each service type would likely install.

Freight ships and barges

Tables 6–8 present the per-vessel cost for U.S.-flagged SOLAS freight ships and barges and domestic freight ships. Table 9 presents the per-vessel cost for foreign-flagged non-SOLAS freight ships.

Table 6. Cost per U.S.-flagged SOLAS freight ship (241 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	2	$200	$400	2	$20	$40
Lock	10	300	3,000	10	30	300
Light	5	400	2,000	5	40	200
Auto-intrusion alarm	5	500	2,500	5	50	250
Hand-held radio	5	500	2,500	5	50	250
Ship alert system	1	2,000	2,000	1	200	200
Portable vapor detector	1	15,000	15,000	1	1,500	1,500
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	16.00 hrs	100/hr	1,600	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 15 crew	1,500/drill	6,000
Total cost per vessel			**$37,900**			**$17,290**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 7. Cost per U.S.-flagged SOLAS freight barge (2 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
VSA (incremental cost)[1]	4.00 hrs	$100/hr	$400	0.25 hrs	$100/hr	$25
VSP (incremental cost)[1]	0.25 hrs	100/hr	25	0.25 hrs	100/hr	25
Total cost per vessel			**$425**			**$50**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 8. Cost per domestic freight ship (99 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	2	$200	$400	2	$20	$40
Lock	10	300	3,000	10	30	300
Light	5	400	2,000	5	40	200
Auto-intrusion alarm	5	500	2,500	5	50	250
Hand-held radio	5	500	2,500	5	50	250
Portable vapor detector	1	15,000	15,000	1	1,500	1,500
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 15 crew	1,500/drill	6,000
Total cost per vessel			**$35,100**			**17,090**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 9. Cost per foreign-flagged non-SOLAS freight ship (70 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Lock	3	$300	$900	3	$30	$90
Light	2	400	800	2	40	80
VSO	1	1,417	1,417	1	1,417	1,417
VSA (incremental cost)[1]	0.25 hrs	33/hr	8	0.25 hrs	33/hr	8
VSP (incremental cost)[1]	0.25 hrs	33/hr	8	0.25 hrs	33/hr	8
Quarterly drills	-		-	1 hr, 4 crew	133/drill	533
Total cost per vessel			**$3,133**			**$2,136**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Tank ships and barges

Tables 10–13 present the per-vessel cost for U.S.-flagged SOLAS and domestic tank ships and tank barges.

Table 10. Cost per U.S.-flagged SOLAS tank ship (114 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	1	$200	$200	1	$20	$20
Lock	10	300	3,000	10	30	300
Light	5	400	2,000	5	40	200
Auto-intrusion alarm	5	500	2,500	5	50	250
Hand-held radio	5	500	2,500	5	50	250
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	16.00 hrs	100/hr	1,600	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 15 crew	1,500/drill	6,000
Total cost per vessel			**$22,700**			**$15,770**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 11. Cost per U.S.-flagged SOLAS tank barge (14 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
VSA (incremental cost)[1]	4.00 hrs	$100/hr	$400	0.25 hrs	$100/hr	$25
VSP (incremental cost)[1]	0.25 hrs	100/hr	25	0.25 hrs	100/hr	25
Total cost per vessel			**$425**			**$50**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 12. Cost per domestic tank ship (34 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	1	$200	$200	1	$20	$20
Lock	10	300	3,000	10	30	300
Light	5	400	2,000	5	40	200
Auto-intrusion alarm	5	500	2,500	5	50	250
Hand-held radio	5	500	2,500	5	50	250
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 15 crew	1,500/drill	6,000
Total cost per vessel			**$19,900**			**$15,570**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 13. Cost per domestic tank barge (2,891 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
VSA (incremental cost)[1]	0.25 hrs	$100/hr	$25	0.25 hrs	$100/hr	$25
VSP (incremental cost)[1]	0.25 hrs	100/hr	25	0.25 hrs	100/hr	25
Total cost per vessel			**$50**			**$50**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Uninspected vessels

Tables 14–16 present the per-vessel cost for U.S.-flagged SOLAS towboats and fish processors and domestic towboats.

Table 14. Cost per U.S.-flagged SOLAS towboat (14 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Lock	3	$300	$900	3	$30	$90
Light	2	400	800	2	40	80
Hand-held radio	1	500	500	1	50	50
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	2.00 hrs	100/hr	200	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 4 crew	400/drill	1,600
Total cost per vessel			**$13,700**			**$10,570**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 15. Cost per U.S.-flagged SOLAS fish processor (1 vessel affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	1	$200	$200	1	$20	$20
Lock	10	300	3,000	10	30	300
Light	2	400	800	2	40	80
Auto-intrusion alarm	2	500	1,000	2	50	100
Hand-held radio	3	500	1,500	3	50	150
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	2.00 hrs	100/hr	200	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 5 crew	500/drill	2,000
Total cost per vessel			**$18,000**			**$11,400**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 16. Cost per domestic towboat (4,645 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Lock	3	$300	$900	3	$30	$90
Light	2	400	800	2	40	80
VSO	1	4,250	4,250	1	4,250	4,250
VSA (incremental cost)[1]	0.25 hrs	100/hr	25	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	0.25 hrs	100/hr	25	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 4 crew	400/drill	1,600
Total cost per vessel			**$6,000**			**$6,070**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

U.S.-flagged SOLAS passenger vessels

Tables 17 and 18 present the per-vessel cost for U.S.-flagged SOLAS passenger vessels.

Table 17. Cost per U.S.-flagged SOLAS cruise vessel (2 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held radio	10	$500	$5,000	10	$50	$500
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	24.00 hrs	100/hr	2,400	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 20 crew	2,000/drill	8,000
Total cost per vessel			**$18,300**			**$17,250**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 18. Cost per other U.S.-flagged SOLAS passenger vessel (109 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	2	$200	$400	2	$20	$40
Lock	20	300	6,000	20	30	600
Auto-intrusion alarm	5	500	2,500	5	50	250
Hand-held radio	5	500	2,500	5	50	250
Ship alert system	1	2,000	2,000	1	200	200
Archway metal detector	1	5,500	5,500	1	550	550
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	2.00 hrs	100/hr	200	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 10 crew	1,000/drill	4,000
Total cost per vessel			**$28,400**			**$14,440**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Passenger vessels ≤ 100 GT

Tables 19–21 present the per-vessel cost for domestic passenger vessels.

Table 19. Cost per domestic passenger vessel, not ferry (223 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	1	$200	$200	1	$20	$20
Lock	10	300	3,000	10	30	300
Light	5	400	2,000	5	40	200
Hand-held radio	5	500	2,500	5	50	250
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 5 crew	500/drill	2,000
Total cost per vessel			**$17,400**			**$11,320**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 20. Cost per domestic ferry > 500 passengers (43 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/ item	Total cost
Hand-held metal detector	2	$200	$400	2	$20	$40
Lock	10	300	3,000	10	30	300
Light	5	400	2,000	5	40	200
Auto-intrusion alarm	5	500	2,500	5	50	250
Hand-held radio	5	500	2,500	5	50	250
Archway metal detector	2	5,500	11,000	2	550	1,100
Portable vapor detector	1	15,000	15,000	1	1,500	1,500
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 15 crew	1,500/drill	6,000
Total cost per vessel			**$46,100**			**$18,190**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 21. Cost per domestic ferry ≤ 500 passengers (435 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	2	$200	$400	2	$20	$40
Lock	10	300	3,000	10	30	300
Light	5	400	2,000	5	40	200
Hand-held radio	5	500	2,500	5	50	250
Portable vapor detector	1	15,000	15,000	1	1,500	1,500
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 10 crew	1,000/drill	4,000
Total cost per vessel			**$32,600**			**$14,840**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Passenger vessels > 100 GT

Tables 22–25 present the per-vessel cost for domestic passenger vessels.

Table 22. Cost per domestic cruise vessel (2 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held radio	10	$500	$5,000	10	$50	$500
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	16.00 hrs	100/hr	1,600	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 20 crew	2,000/drill	8,000
Total cost per vessel			**$15,500**			**$17,050**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 23. Cost per domestic passenger vessel, not ferry (67 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	1	$200	$200	1	$20	$20
Lock	20	300	6,000	20	30	600
Camera	5	475	2,375	5	48	240
Auto-intrusion alarm	10	500	5,000	10	50	500
Hand-held radio	10	500	5,000	10	50	500
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills			-	1 hr, 10 crew	1,000/drill	4,000
Total cost per vessel			**$28,275**			**$14,410**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 24. Cost per domestic ferry > 500 passengers (49 vessels affected)

Item	Initial			Annual		
	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	2	$200	$400	2	$20	$40
Lock	20	300	6,000	20	30	600
Camera	5	475	2,375	5	48	240
Auto-intrusion alarm	10	500	5,000	10	50	500
Hand-held radio	10	500	5,000	10	50	500
Archway metal detector	2	5,500	11,000	2	550	1,100
Portable vapor detector	1	15,000	15,000	1	1,500	1,500
X-ray baggage machine	1	39,000	39,000	1	3,900	3,900
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 15 crew	1,500/drill	6,000
Total cost per vessel			**$93,475**			**$22,930**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 25. Cost per domestic ferry ≤ 500 passengers (92 vessels affected)

Item	Initial			Annual		
	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Hand-held metal detector	2	$200	$400	2	$20	$40
Lock	20	300	6,000	20	30	600
Auto-intrusion alarm	5	500	2,500	5	50	250
Hand-held radio	5	500	2,500	5	50	250
Archway metal detector	2	5,500	11,000	2	550	1,100
Portable vapor detector	1	15,000	15,000	1	1,500	1,500
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 10 crew	1,000/drill	4,000
Total cost per vessel			**$47,100**			**$16,290**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

MODUs

Table 26 presents the per-vessel cost for U.S.-flagged SOLAS MODUs.

Table 26. Cost per U.S.-flagged SOLAS MODU (2 vessels affected)

Item	Initial			Annual		
	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Lock	10	$300	$3,000	10	$30	$300
Light	5	400	2,000	5	40	200
Auto-intrusion alarm	5	500	2,500	5	50	250
Hand-held radio	5	500	2,500	5	50	250
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	16.00 hrs	100/hr	1,600	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 10 crew	1,000/drill	4,000
Total cost per vessel			**$22,500**			**$13,750**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

OSVs

Tables 27 and 28 present the per-vessel cost for U.S.-flagged SOLAS and domestic OSVs.

Table 27. Cost per U.S.-flagged SOLAS OSV (75 vessels affected)

	Initial			Annual		
Item	**Quantity**	**Cost/item**	**Total cost**	**Quantity**	**Cost/item**	**Total cost**
Hand-held metal detector	1	$200	$200	1	$20	$20
Lock	10	300	3,000	10	30	300
Light	2	400	800	2	40	80
Auto-intrusion alarm	2	500	1,000	2	50	100
Hand-held radio	3	500	1,500	3	50	150
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 4 crew	400/drill	1,600
Total cost per vessel			**$18,200**			**$11,000**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 28. Cost per domestic OSV (981 vessels affected)

	Initial			Annual		
Item	**Quantity**	**Cost/item**	**Total cost**	**Quantity**	**Cost/item**	**Total cost**
Hand-held metal detector	1	$200	$200	1	$20	$20
Lock	10	300	3,000	10	30	300
Light	2	400	800	2	40	80
Auto-intrusion alarm	2	500	1,000	2	50	100
Hand-held radio	3	500	1,500	3	50	150
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	4.00 hrs	100/hr	400	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 4 crew	400/drill	1,600
Total cost per vessel			**$16,200**			**$10,800**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Other U.S.-flagged SOLAS vessels

Tables 29–31 present the per-vessel cost for other U.S.-flagged SOLAS vessels.

Table 29. Cost per U.S.-flagged SOLAS oil recovery vessel (1 vessel affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Lock	10	$300	$3,000	10	$30	$300
Light	2	400	800	2	40	80
Auto-intrusion alarm	2	500	1,000	2	50	100
Hand-held radio	3	500	1,500	3	50	150
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	2.00 hrs	100/hr	200	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 3 crew	300/drill	1,200
Total cost per vessel			**$17,800**			**$10,580**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 30. Cost per U.S.-flagged SOLAS research vessel (8 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Lock	10	$300	$3,000	10	$30	$300
Light	2	400	800	2	40	80
Auto-intrusion alarm	2	500	1,000	2	50	100
Hand-held radio	3	500	1,500	3	50	150
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	2.00 hrs	100/hr	200	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 5 crew	500/drill	2,000
Total cost per vessel			**$17,800**			**$11,380**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Table 31. Cost per U.S.-flagged SOLAS industrial vessel (20 vessels affected)

	Initial			Annual		
Item	Quantity	Cost/item	Total cost	Quantity	Cost/item	Total cost
Lock	3	$300	$900	3	$30	$90
Light	2	400	800	2	40	80
Hand-held radio	1	500	500	1	50	50
Ship alert system	1	2,000	2,000	1	200	200
VSO	1	8,500	8,500	1	8,500	8,500
VSA (incremental cost)[1]	8.00 hrs	100/hr	800	0.25 hrs	100/hr	25
VSP (incremental cost)[1]	2.00 hrs	100/hr	200	0.25 hrs	100/hr	25
Quarterly drills	-		-	1 hr, 5 crew	500/drill	2,000
Total cost per vessel			**$13,700**			**$10,970**

[1] We assume that the company will develop an overarching assessment or plan for its entire fleet (cost estimated above in section on company costs), and then the company will add individual vessels to its overarching assessment or plan. The cost presented in this table is to add characteristics unique to a particular vessel of this type to the overarching company assessment or plan.

Example calculations for different types of companies

Example calculations for different types of companies are presented below. These costs incorporate both company-level costs and vessel-level costs. The companies in these examples are good representations of the types of companies affected.

Example 1 — U.S.-flagged SOLAS company

Company A owns 2 freight ships, 4 industrial vessels, 20 OSVs, and 4 research vessels, all of which are U.S.-flagged SOLAS vessels. The initial and annual costs for this company are presented in Table 32.

Table 32. Example cost for U.S.-flagged SOLAS company

		Initial		Annual	
Cost	Quantity	Cost/item	Total cost	Cost/item	Total cost
Company (Table 5)	1	$174,500	$174,500	$159,300	$159,300
Freight ships (Table 6)	2	37,900	75,800	17,290	34,580
Industrial vessels (Table 30)	4	13,700	54,800	10,970	43,880
OSVs (Table 26)	20	18,200	364,000	11,000	220,000
Research vessels (Table 29)	4	17,800	71,200	11,380	45,520
Total company cost			**$740,300**		**$503,280**

Example 2a — large non-towing company (no passenger vessels)

Company B owns 22 OSVs. The initial and annual costs for this company are presented in Table 33.

Table 33. Example cost for large non-towing company (no passenger vessels)

		Initial		Annual	
Cost	Quantity	Cost/item	Total cost	Cost/item	Total cost
Company (Table 5)	1	$174,500	$174,500	$159,300	$159,300
OSVs (Table 27)	22	16,200	356,400	10,800	237,600
Total company cost			**$530,900**		**$396,900**

Example 2b — large non-towing company (with passenger vessels)

Company C owns 9 ferries 100 GT or less carrying fewer than 500 passengers, 11 ferries over 100 GT carrying more than 500 passengers, and 14 ferries over 100 GT carrying fewer than 500 passengers. The initial and annual costs for this company are presented in Table 34.

Table 34. Example cost for large non-towing company (with passenger vessels)

		Initial		Annual	
Cost	Quantity	Cost/item	Total cost	Cost/item	Total cost
Company (Table 5)	1	$174,500	$174,500	$159,300	$159,300
Ferries, ≤ 100 GT, ≤ 500 pass. (Table 20)	9	32,600	293,400	14,840	133,560
Ferries, > 100 GT, > 500 pass. (Table 23)	11	93,475	1,028,225	22,930	252,230
Ferries, > 100 GT, ≤ 500 pass. (Table 24)	14	47,100	659,400	16,290	228,060
Total company cost			**$2,155,525**		**$773,150**

Example 3—large towing company

Company D owns 12 OSVs and 5 towboats. The initial and annual costs for this company are presented in Table 35.

Table 35. Example cost for large towing company

		Initial		Annual	
Cost	Quantity	Cost/item	Total cost	Cost/item	Total cost
Company (Table 5)	1	$161,700	$161,700	$158,700	$158,700
OSVs (Table 27)	12	16,200	194,400	10,800	129,600
Towboats (Table 15)	5	6,000	30,000	6,070	30,350
Total company cost			**$386,100**		**$349,000**

Example 4—small non-towing company

Company E owns 3 ferries 100 GT or less carrying more than 500 passengers and 6 ferries 100 GT or less carrying fewer than 500 passengers. The initial and annual costs for this company are presented in Table 36.

Table 36. Example cost for small non-towing company

		Initial		Annual	
Cost	Quantity	Cost/item	Total cost	Cost/item	Total cost
Company (Table 5)	1	$51,000	$51,000	$43,400	$43,400
Large ferries (Table 19)	3	46,100	138,300	18,190	54,570
Small ferries (Table 20)	6	32,600	195,600	14,840	89,040
Total company cost			**$384,900**		**$187,010**

Example 5—small towing company

Company F owns 1 freight barge, 6 tank barges, and 6 towboats. The initial and annual costs for this company are presented in Table 37.

Table 37. Example cost for small towing company

		Initial		Annual	
Cost	Quantity	Cost/item	Total cost	Cost/item	Total cost
Company (Table 5)	1	$44,600	$44,600	$43,200	$43,200
Tank barges (Table 12)	6	50	300	50	300
Towboats (Table 15)	6	6,000	36,000	6,070	36,420
Total company cost			**$80,900**		**$79,920**

Total national cost of vessel security

The national cost of vessel security is the sum of the individual cost estimated for each of 2,186 companies affected. National cost is discounted to its PV at 7 percent (2003–2012). The national initial and annual cost is presented in Table 38.

Table 38. Total national PV cost for vessel security, in $millions (2003-2012, 7 percent discount rate)

	U.S.-flagged SOLAS	Domestic	Foreign-flagged non-SOLAS	Total	PV U.S.-flagged SOLAS	PV Domestic	PV Foreign-flagged non-SOLAS	PV Total
2003 (initial)	$42	$175	$1	$218	$42	$175	$1	$218
2004 (annual)	32	143	1	176	30	134	1	165
2005 (annual)	32	143	1	176	28	125	1	154
2006 (annual)	32	143	1	176	26	117	1	144
2007 (annual)	32	143	1	176	24	110	1	135
2008 (annual)	32	143	1	176	22	102	1	126
2009 (annual)	32	143	1	176	21	96	1	117
2010 (annual)	32	143	1	176	20	89	1	110
2011 (annual)	32	143	1	176	18	84	1	103
2012 (annual)	32	143	1	176	17	78	1	96
Total cost	**$330**	**$1,462**	**$12**	**$1,802**	**$248**	**$1,110**	**$9**	**$1,368**

Details may not sum to total due to independent rounding.

Table 39 presents the national cost for different elements of compliance for U.S.-flagged SOLAS, domestic, and foreign-flagged non-SOLAS vessels (these costs are not discounted). As shown, CSOs and training are the driving costs both initially and annually.

Table 39. Total national initial and annual cost by element of compliance, in $millions

	Initial		Annual	
U.S.-flagged SOLAS vessels	**Cost**	**Percent of total**	**Cost**	**Percent of total**
Equipment	$12	29%	1	3%
Drilling	0	0%	3	10%
VSO	5	12%	5	15%
CSO, training	22	52%	23	72%
Paperwork	3	7%	< 1	< 1%
Total	*$42*	*100%*	*$32*	*100%*
Domestic vessels				
Equipment	$51	29%	8	6%
Drilling	0	0%	16	11%
VSO	25	14%	31	22%
CSO, training	89	51%	87	61%
Paperwork	10	6%	1	< 1%
Total	*$175*	*100%*	*$143*	*100%*
Foreign-flagged non-SOLAS vessels				
Equipment	0.1	9%	< 0.1	1%
Drilling	0.0	0%	< 0.1	3%
VSO	0.1	8%	0.1	9%
CSO, training	1.0	83%	1.0	87%
Paperwork	< 0.1	< 1%	< 0.1	< 1%
Total	*$1.3*	*100%*	*$1.2*	*100%*

Costs for MARSEC Level 2

MARSEC Level 1 is the new level of enhanced security following September 11, 2001, and the costs presented in the previous section represent the measures that companies might take to reach this new level. Periodically, the security level in ports will be raised to MARSEC Level 2 in response to intelligence regarding specific threats. The elevated MARSEC Level will coincide with the "color code" threat levels

used by DHS. MARSEC Level 1 is equivalent to Code Yellow Alert, MARSEC Level 2 is equivalent to Code Orange Alert, and MARSEC Level 3 is equivalent to Code Red Alert. The duration of the increased security level will be entirely dependent on the intelligence received.

For this analysis, we estimate costs for MARSEC Level 2 using the following assumptions: the country will be elevated to MARSEC Level 2 twice a year, and each elevation will last 21 days. For vessels, we assume that increased personnel time will be the primary cost. Vessel security officers and other key personnel will likely work more hours during a period when MARSEC Level 2 occurs. We assume that vessels will still transit the ports at heightened security levels.

To estimate costs for MARSEC Level 2, we calculated full-time and overtime hours for VSOs and full-time and overtime hours for a portion of key crewmembers. We estimated these hours, multiplied them by the appropriate rates, then multiplied these costs by the estimated number of VSOs and key crew.

The cost per 8-hour day of a VSO and key crewmember is approximately $236.[3] This is a "loaded" labor rate, meaning it is what the company pays per hour to employ the person, not what the person makes in hourly wages. The loaded labor rate includes the costs of benefits (health insurance, vacation, sick leave, etc.). We used a labor load rate of 1.4; thus, the daily pay for a VSO or key crewmember is approximately $169 ($236/1.4 = $169). We assume that when the VSO or key crewmember works overtime, he will receive time-and-a-half pay, which means he will cost $253 for every 8 hours of overtime ($169 × 1.5 = $253). Thus, the daily cost of a VSO or key crewmember working 8 hours of regular time and 8 hours of overtime is approximately $500 per day during periods at MARSEC Level 2.

We estimate that there are 587 VSOs aboard U.S.-flagged SOLAS vessels and 6,670 VSOs aboard domestic vessels (remembering that barges do not have VSOs in our analysis). We estimate that there will also be a key crewmember that can assist with security duties during MARSEC Level 2 aboard every U.S.-flagged SOLAS vessel, for a total of 587 key crewmembers. We estimate that there will be a key crewmember aboard half of the domestic vessels (since domestic vessels, particularly passenger vessels, are less likely to operate round-the-clock), for a total of 3,335 key crewmembers. As previously stated, we assume that both VSOs and key crewmembers will work 16 hours a day (8 hours of regular time, 8 hours of overtime) during the 42 days (2 × 21 days) that the ports are at MARSEC Level 2.

Given these assumptions, we estimate that elevating the security level to MARSEC Level 2 twice a year for 21 days will cost vessel owners and operators approximately $235 million annually and PV $1.764 billion over the period of our analysis (7 percent discount rate, 2003–2012). These costs are summarized in Table 40. Given these assumptions, the *daily* operating costs at MARSEC Level 2 are approximately $6 million for vessels.

Table 40. Estimated annual costs for MARSEC Level 2

	Annual cost per person at MARSEC Level 2[1]	Number of personnel	Total annual costs for MARSEC Level 2	Total PV annual costs for MARSEC Level 2
VSOs, U.S.-flagged SOLAS	$21,000	587	$12,327,000	$92,640,268
Key crew, U.S.-flagged SOLAS	21,000	587	12,327,000	92,640,268
VSOs, domestic	21,000	6,670	140,070,000	1,052,658,581
Key crew, domestic	21,000	3,335	70,035,000	526,329,291
Total		**4,212**	**$234,759,000**	**$1,764,268,407**

[1] (8 hours of regular time at $236 + 8 hours of overtime at $253) × 42 days ≈ $21,000

[3] Base cost of approximately $85,000 per year; $7,083 per month ($85,000 per year/12 months); $236 per day ($7,083 per month/30 days).

Initial Regulatory Flexibility Act Analysis

Although the Coast Guard is exempt from the APA for the MTSA rulemakings, we have prepared this IRFA to examine the impacts of the TIR on small entities (5 USC 601 *et seq.*). A small entity may be–

- A small business, defined as any independently owned and operated business not dominant in its field that qualifies as a small business per the Small Business Act (15 USC 632)
- A small not-for-profit organization
- A small governmental jurisdiction (locality with fewer than 50,000 people)

Entities affected by the proposed rule are owners and operators of vessels that meet the applicability criteria of the TIR. Only U.S. vessels, both SOLAS and domestic, are included in this analysis. We determined which entities were small based on the NAICS and the *Reference USA* database available online. In some cases, businesses are small based on the number of employees, though many businesses are classified based on their annual revenues. We found 88 companies owning 162 U.S.-flagged SOLAS vessels and 1,683 companies owning 4,813 domestic vessels that are small businesses and will be affected by the TIR.

This IRFA addresses the following.

- The reason the agency is considering this action
- The objectives of and legal basis for the proposed rule
- The number and types of small entities to which the rule will apply
- Projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including the classes of small entities that will be subject to the requirements and the type of professional skills necessary for the preparation of the reports and records
- Other relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule
- Significant alternatives to the component under consideration that accomplish the stated objectives of applicable statutes and may minimize any significant economic impact of the proposed rule on small entities

Many of these issues have been discussed at length in other sections of this Regulatory Assessment. We broadly address some of these issues here and refer the reader to applicable sections where more detail can be found.

Reason for agency action

This rule is one of six TIRs that comprise a new subchapter on the requirements for maritime security mandated by the MTSA of 2002. More detail can be found in "Implementation of National Maritime Security Initiatives," which is the General Preamble for these rulemakings (USCG-2003-14792).

Objective and legal basis

This rule is mandated by the MTSA. This rule is one of six TIRs that implement national maritime security initiatives concerning area maritime transportation, vessels, facilities, offshore facilities, and the Automatic Identification System. They align security requirements with those of the ISPS Code and recent amendments to SOLAS. This rule will benefit persons and property by requiring security plans and procedures to prevent, deter, detect, and respond to unlawful acts that threaten vessels. More detail

can be found in "Implementation of National Maritime Security Initiatives," which is the General Preamble for these rulemakings (USCG-2003-14792).

Number of small entities affected

Because the Coast Guard does not maintain or require revenue or profit data on the regulated entities, we rely on information supplied by private-sector sources. For this analysis, we researched the affected companies in the *Reference USA* database available online.

U.S.-flagged SOLAS vessels

We estimate that 88 companies that own U.S.-flagged SOLAS vessels will be affected by the TIR. We researched these companies and found revenue data for 32 of them (36 percent). The revenue impacts for these vessels are presented in Table 41. In this analysis, we consider the impacts to small businesses during the first year of implementation, when companies will be conducting assessments, developing security plans, and purchasing equipment. We also consider annual revenue impacts following the first year, when companies will have the assessments and plans complete, but will need to conduct quarterly drilling. When we estimate revenue impacts, we do not discount annual costs or annual revenues.

Table 41. Estimated revenue impacts for small businesses that own U.S.-flagged SOLAS vessels

	Initial		Annual	
Percent impact on annual revenue	Number of small entities with known revenue data	Percent of small entities with known revenue data	Number of small entities with known revenue data	Percent of small entities with known revenue data
0-3%	8	25%	8	25%
3-5%	3	9%	3	9%
5-10%	1	3%	4	13%
10-20%	6	19%	4	13%
20-30%	4	13%	3	9%
30-40%	1	3%	2	6%
40-50%	3	9%	2	6%
> 50%	6	19%	6	19%
Total	**32**	**100%**	**32**	**100%**

We assume that the remaining 56 entities that did not have revenue data are small businesses. We anticipate that the TIR may have a significant economic impact on these businesses.

Domestic vessels

We estimate that 1,683 companies that own domestic vessels will be affected by the TIR. We researched these companies and found revenue data for 822 of them (49 percent). The revenue impacts for these vessels are presented in Table 42. As with U.S.-flagged SOLAS vessels, we consider the impacts to small businesses during the first year of implementation, when companies will be conducting assessments, developing security plans, and purchasing equipment. We also consider annual revenue impacts following the first year, when companies will have the assessments and plans complete, but will need to conduct quarterly drilling.

Table 42. Estimated revenue impacts for small businesses that own domestic vessels

Percent impact on annual revenue	Initial		Annual	
	Number of small entities with known revenue data	Percent of small entities with known revenue data	Number of small entities with known revenue data	Percent of small entities with known revenue data
0–3%	366	45%	393	48%
3–5%	86	10%	87	11%
5–10%	171	21%	170	21%
10–20%	85	10%	64	8%
20–30%	34	4%	37	5%
30–40%	19	2%	16	2%
40–50%	9	1%	16	2%
> 50%	52	6%	39	5%
Total	822	100%	822	100%

We assume that the remaining 861 entities that did not have revenue data are small businesses. We anticipate that the TIR may have a significant economic impact on these businesses.

Types of entities affected by the proposed rule

We classified small businesses by NAICS code for those businesses that had revenue information. The types of small entities that will be affected by the proposed rule are presented in Table 43.

Table 43. NAICS codes, descriptions, definitions, and number and percent of small businesses

NAICS code	Description	Number of small entities with known NAICS code	Percent of small entities with known NAICS code
488330	Navigational Services to Shipping	222	27%
483211	Inland Water Freight Transportation	75	9%
488310	Port and Harbor Operations	68	8%
234990	All Other Heavy Construction	66	8%
713990	All Other Amusement and Recreation Industries	40	5%
487210	Scenic and Sightseeing Transportation, Water	37	5%
483212	Inland Water Passenger Transportation	36	4%
336611	Ship Building and Repairing	28	3%
422720	Petroleum, Petroleum Products Whse (ex Bulk Stations and Terminals)	21	3%
421860	Transportation Equipment and Supplies (ex Motor Vehicle) Whse	16	2%
483113	Coastal and Great Lakes Freight Transportation	16	2%
213112	Support Activities for Oil and Gas Operations	13	2%
441222	Boat Dealers	10	1%
444190	Other Building Material Dealers	10	1%
488510	Freight Transportation Arrangement	10	1%
713930	Marinas	9	1%
488390	Other Support Activities for Water Transportation	8	1%
561510	Travel Agencies	8	1%
811198	All Other Automotive Repair and Maintenance	8	1%
561520	Tour Operators	7	1%
487210	Charter Fishing	7	1%
Various	Other NAICS codes (fewer than 5 businesses in each category)	107	13%
Total		822	100%

Reporting and recordkeeping

We anticipate that VSAs and VSPs will need to be completed by experienced, professional personnel with training or background in security. During the first year of implementation, personnel will need to develop and complete initial VSAs and VSPs. Following the first year, VSAs and VSPs will need to be updated.

Other Federal rules

The proposed rule does not duplicate, overlap, or conflict with any other Federal requirements.

Regulatory alternatives

The Coast Guard developed the N-RAT to assess the risk prior to and following implementation of the TIRs for security. Based on the results from the N-RAT, we determined the applicability of these TIRs for vessels, facilities, OCS facilities, and ports. The N-RAT results demonstrated that the vessels that are covered in this TIR are at high risk for a transportation security incident. The MTSA does not contain any special provisions regarding type of vessel or size of the entity that owns the vessel. More detail on the N-RAT can be found in "Implementation of National Maritime Security Initiatives," which is the General Preamble for these rulemakings (USCG-2003-14792).